

This page is mainly introduced the X33CrNiMnN23-3 chemical information, mechanical properties, physical properties, mechanical properties, heat treatment, and Micro structure, etc. It also contains the use of X33CrNiMnN23-3, such as it is commonly used in bars, sheet, plates, steel coils, steel pipes, forged and other materials application.

## Data Table for Grades Stainless Steels X33CrNiMnN23-3

| X33CrNiMnN23-3 Standard Number: |                   |                                                                                                                      |
|---------------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------|
| ITEM                            | Standard Number   | Descriptions                                                                                                         |
| 1                               | ISO 683-15 (1992) | Heat-treatable steels, alloy steels and free-cutting steels -- Part 15: Valve steels for internal combustion engines |

| X33CrNiMnN23-3 Chemical composition(mass fraction)(wt.%) |         |         |
|----------------------------------------------------------|---------|---------|
| Chemical                                                 | Min.(%) | Max.(%) |
| C                                                        | 0.28    | 0.38    |
| Si                                                       | 0.50    | 1.00    |
| Mn                                                       | 1.50    | 3.50    |
| P                                                        |         | 0.050   |
| S                                                        |         | 0.030   |
| Cr                                                       | 22.00   | 24.00   |
| Mo                                                       |         | 0.50    |
| Ni                                                       | 7.00    | 9.00    |
| W                                                        |         | 0.50    |
| N                                                        | 0.25    | 0.35    |

| X33CrNiMnN23-3 Physical Properties |         |                          |
|------------------------------------|---------|--------------------------|
| Tensile strength                   | 115-234 | $\sigma_b$ /MPa          |
| Yield Strength                     | 23      | $\sigma_{0.2} \geq$ /MPa |
| Elongation                         | 65      | $\delta_5 \geq$ (%)      |
| $\psi$                             | -       | $\psi \geq$ (%)          |
| Akv                                | -       | $Akv \geq$ /J            |
| HBS                                | 123-321 | -                        |
| HRC                                | 30      | -                        |

### X33CrNiMnN23-3 Mechanical Properties

|                  |         |                          |
|------------------|---------|--------------------------|
| Tensile strength | 231-231 | $\sigma_b$ /MPa          |
| Yield Strength   | 154     | $\sigma_{0.2} \geq$ /MPa |
| Elongation       | 56      | $\delta 5 \geq$ (%)      |
| $\psi$           | -       | $\psi \geq$ (%)          |
| Akv              | -       | Akv $\geq$ /J            |
| HBS              | 235-268 | -                        |
| HRC              | 30      | -                        |

### X33CrNiMnN23-3 Heat Treatment Regime

| Annealing | Quenching | Tempering | Normalizing | Q & T |
|-----------|-----------|-----------|-------------|-------|
| √         | √         | √         | √           | √     |

### X33CrNiMnN23-3 Range of products

| Product type    | Products                                 | Dimension                  | Processes                                   | Deliver Status                                                |
|-----------------|------------------------------------------|----------------------------|---------------------------------------------|---------------------------------------------------------------|
| Plates / Sheets | Plates / Sheets                          | 0.08-200mm(T)*W*L          | Forging, hot rolling and cold rolling       | Annealed, Solution and Aging, Q+T, ACID-WASHED, Shot Blasting |
| Steel Bar       | Round Bar, Flat Bar, Square Bar          | Φ8-1200mm*L                | Forging, hot rolling and cold rolling, Cast | Black, Rough Turning, Shot Blasting,                          |
| Coil / Strip    | Steel Coil /Steel Strip                  | 0.03-16.0x1200mm           | Cold-Rolled & Hot-Rolled                    | Annealed, Solution and Aging, Q+T, ACID-WASHED, Shot Blasting |
| Pipes / Tubes   | Seamless Pipes/Tubes, Welded Pipes/Tubes | OD:6-219mm x WT:0.5-20.0mm | Hot extrusion, Cold Drawn, Welded           | Annealed, Solution and Aging, Q+T, ACID-WASHED                |

### We can produce Stainless Steels the specifications follows:

Note:

- (1) listed in the table apex diameter (d), to steel thickness (a) multiples said.
- (2) in the ASTM A6 standard specified scope can meet any additional conditions.
- (3) from the standard for 50 mm (2 in).

Mechanical properties

Mechanische Eigenschaften

Caracteristiques mecaniques

ReH Minimum yield strength / Mindestwert der oberen Streckgrenze / Limite d'élasticité minimale

Rm Tensile strength / Zugfestigkeit / Resistance a la traction

A Minimum elongation / Mindestwert der Bruchdehnung / Allongement minimal

J Notch impact test / Kerbschlagbiegeversuch / Essai de flexion par choc

Round bar:

Diameter : 1mm-2000mm

Square bar:

Size: 50mm \* 50mm-600mm \*600mm

Plate steel/flat bar:

Size: Thickness: 0.1mm-800mm Width: 10mm to 1500mm

Tube/pipe:

Size: OD: 6-219mm WT: 1-35 mm.

Cold-rolled sheet: Thickness: 2-5mm Width:1000mm Length: 2000mm

Hot-rolled sheet: Thickness:6-80mm Width: 210-610mm

Length: We can supply any length based on the customer's requirement.

Forging/hot rolling/ extrusion of steel.

Forging: Shafts with flanks/pipes/tubes/slugs/donuts/cubes/other shapes

Finished goods condition: hot forging/hot rolling + annealing/normalizing + tempering/quenching + tempering/any conditions based on the customer's requirement

Surface conditions: scaled (hot working finish)/ground/rough machining/fine machining/based on the customer's requirement

Furnaces for metallurgical processing: electrode arc + LF/VD/VOD/ESR/Vacuum consumable electrode.

Ultrasonic inspection: 100% ultrasonic inspection for any imperfections or based on the customer's requirement.

UTS according to SEP 1921 C/c,D/d,E/e;A388 or GB/T 6402

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We serve you with our honesty, integrity, and professionalism.